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TUPOLEV
TU - 134 A
Jetliner
General Informat.

TUPOLEV TU-134A

JETLINER

GENERAL INFORMATION

A. GENERAL INFORMATION

The TU-134 A, a high performance twin turboprop airliner, is a low-wing monoplane with a swept back T-tail lay-out. The fuselage is of pressurized semimonocoque design and has circular cross section.

Its two turboprop engines /type D-30, 2nd series/ have 6 800 kp take-off thrust each /under ISA conditions/, and are equipped with thrust reversers. The engines being mounted on the rear part of the fuselage, there is a very low noise level in the passenger cabins.

The auxilliary power unit TA-8 makes the TU-134 A independent on the ground equipment for engine-starting, air-conditioning and power supply.

On board of the TU-134 A is all the modern radio communication, navigation and radar equipment /including SSR transponder mode A, B, C/, which ensures high safety standard and regularity of flying under all weather conditions by day or night. Being so equipped the TU-134 A is capable to do automatic approach under the Weather Minima corresponding ICAO Category I conditions.

The steerable nose gear /max. 55°/ as well as excellent field of vision from the cockpit enable very good maneuverability on all airfields /runway width of only 40 m is sufficient for a complete 180° turn/.

The flight crew consists of two pilots and a navigator.

TU-134 A aircraft, designed for short and medium haul passenger and cargo transport, can carry 8 200 kgs /18078 lb/ payload over 2 000 km /1080 n.m./ distance and 5 000 kgs /11023 lb/ payload over 3 200 km /1730 n.m./ distance.

Standard version cabins offer seating accommodation for 76 passengers. Three air-hostesses take care of the passengers comfort.

In the rear part of the fuselage, just before the rear cargo compartment, are two toilets.

There are two cargo compartments - forward and rear; both can be loaded through doors on the right side of the fuselage.

B. MAIN FLIGHT AND TECHNICAL DATAWeight limits

Max. ramp /taxi/ weight	47 200 kgs	/104056 lb/
Max. take-off weight	47 000 kgs	/103615 lb/
Max. landing weight	43 000 kgs	/ 94797 lb/
Max. landing weight in emergency	47 000 kgs	/103615 lb/
Dry operating weight	29 000 kgs	/ 63932 lb/
Max. payload	8 200 kgs	/ 18077 lb/
Max. fuel tanks capacity	13 200 kgs	/ 29100 lb/

Take-off performance /ISA, TOW: 47000 kgs, flaps: 20°/

Normal lift-off speed	273 km/hour	147 knots
Decision speed /V ₁ /	255 km/hour	138 knots
Rotation speed /V _R /	265 km/hour	143 knots
Take-off safety speed /V ₂ /		
flaps: 20° : landing-gear retracted	273 km/hour	147 knots
flaps: 0° : landing-gear retracted	310 km/hour	167 knots

Take-off run /2-engines/

actual	1 400 m	/4595 ft/
required	1 760 m	/5775 ft/

Take-off distance required /2-engines/

balanced take-off runway length /flaps: 20°/	2 440 m	/8005 ft/
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Climbing performance

Practical ceiling - take-off weight	11 500 m	/FL 380/
47 000 kgs /103615 lb/		
Time to climb - take-off weight		
47 000 kgs /103615 lb/-to: - 11 500 m /FL 380/		37 min
- 10 000 m /FL 330/		27 min
- 6 000 m /FL 200/		13 min

Climbing

ISA, 45 000 kgs, 2-engines, nominal rating

FL	50	100	150	200	250	310	330	350	370
m/sec	14	12,5	11	9,3	7,4	4,8	3,8	2,8	1,5
ft/min	2756	2460	2165	1830	1450	940	740	550	295

ISA, 45 000 kgs, 1-engine, nominal rating

FL	50	100	150	170
m/sec	2,3	1,4	0,5	0,1
ft/min	450	275	99	20

Landing performance /ISA, LW: 43 000 kgs /94797 lb/, flaps: 38°, spoilers, air brakes fully extended, reverse thrust/

Min. threshold speed V_{ATO}	265 km/hour	143 knots
Normal touch-down speed V_{TD}	248 km/hour	134 knots
Landing run	780 m	/2560 ft/
Landing runway length required:		
- ICAO /k = 1,43/	1 920 m	/6300 ft/
- BCAR /k = 1,67/	2 240 m	/7350 ft/
Landing distance /H = 15 m/	1 340 m	/4395 ft/

Speed limits

Max. IAS /fuel tanks No 3 empty/	605 km/hour	327 knots
Max. IAS /fuel tanks No 3 full /	505 km/hour	273 knots
Max. permissible M	0,82	

Minimum speeds

Flaps	0°	10°	20°	38°
km/hour	330	300	270	270
knots	178	162	146	146

Landing speeds

Landing weight /t/	V _{AT}		V _{TD}	
	km/h	knots	km/h	knots
47	278	150	262	141
46	275	148	258	139
45	272	147	255	138
44	268	145	252	136
43	265	143	248	134
42	263	142	245	132
41	260	140	242	131
40	257	139	238	129
39	253	137	235	127
38	250	135	232	125
37	250	135	232	125
36	250	135	232	125
35	250	135	232	125

Holding /ISA, FL 50, G = 41 000 kgs/

		Consumption	Speed	Knots
V =	V _{MD max}	2 170 kgs/hour	338 km/hour	210
V = 1,05	V _{MD max}	2 200 kgs/hour	410 km/hour	221
V = 1,1	V _{MD max}	2 260 kgs/hour	430 km/hour	232
V = 1,15	V _{MD max}	2 330 kgs/hour	450 km/hour	243

Aircraft dimensions

Wing span	29,01 m	1142''
Overall length	37,322 m	1470''
Overall height	9,144 m	360''
Wheel track	9,45 m	372''
Wheel base	15,83 m	623''

Passenger entrance door dimensions

Width	0,7 m	27,56''
Height	1,61 m	63,39''
Threshold height above ground level	2,415 m	95,08''

Cargo compartments

Compartment	Capacity	Floor area	Max. specific load	Max. load	Capacity /in kgs/ of cargo compartment if loaded by:	
					Baggage 150 kgs/m ³	Cargo, Mail 285 kgs/m ³
forward	6 m ³	3,2 m ²	600 kgs/m ²	1920 kgs 4230 lb	900 kgs 1985 lb	1710 kgs 3770 lb
rear	8,5 m ³	4,5 m ²	600 kgs/m ²	2700 kgs 5950 lb	1275 kgs 2810 lb	2420 kgs 5335 lb

Cargo compartment door dimensions

Compartment	Width m	Height m	Threshold height above ground level
forward	1,250 49,21 "	0,750 29,53 "	2,350 92,52 "
rear	0,905 35,63 "	1,220 48,03 "	2,341 92,17 "

Center of gravity limits /with landing gear extended or retracted/ :

forward limit 21 % MAC
aft. limit 38 % MAC

Caution:

At 51,5 % MAC the aircraft would tilt over and rear end of the fuselage would fall to the ground; for safety reasons the limit value of 49 % MAC should never be exceeded. Therefore it is strictly forbidden to load first the rear cargo compartment or to unload first the forward cargo compartment.

Maximum permissible crosswind component for take-off and landing is 14 m/sec. Maximum permissible tailwind component is 10 m/sec. $\approx 27 \text{ km}$
Maximum permissible crosswind component for taxiing and towing is 30 m/sec.

When towing the aircraft at wind speed higher than 15 m/sec, the control surfaces must be locked.

Ground handling equipment:

For TA-8 APU starting: 27-28,5 V DC, 32-36 kW.

For D-30-2 engine starting: compressed air 0,635 kgs/sec at 2,5 - 5,2 kp/cm² and at 103 - 292°C.

For oil filling: fine oil filter with 8000 - 10 000 holes/cm².

AC ground power unit: 400 Hz, 1-phase 115 V, 6 kVA.

FIG. 1

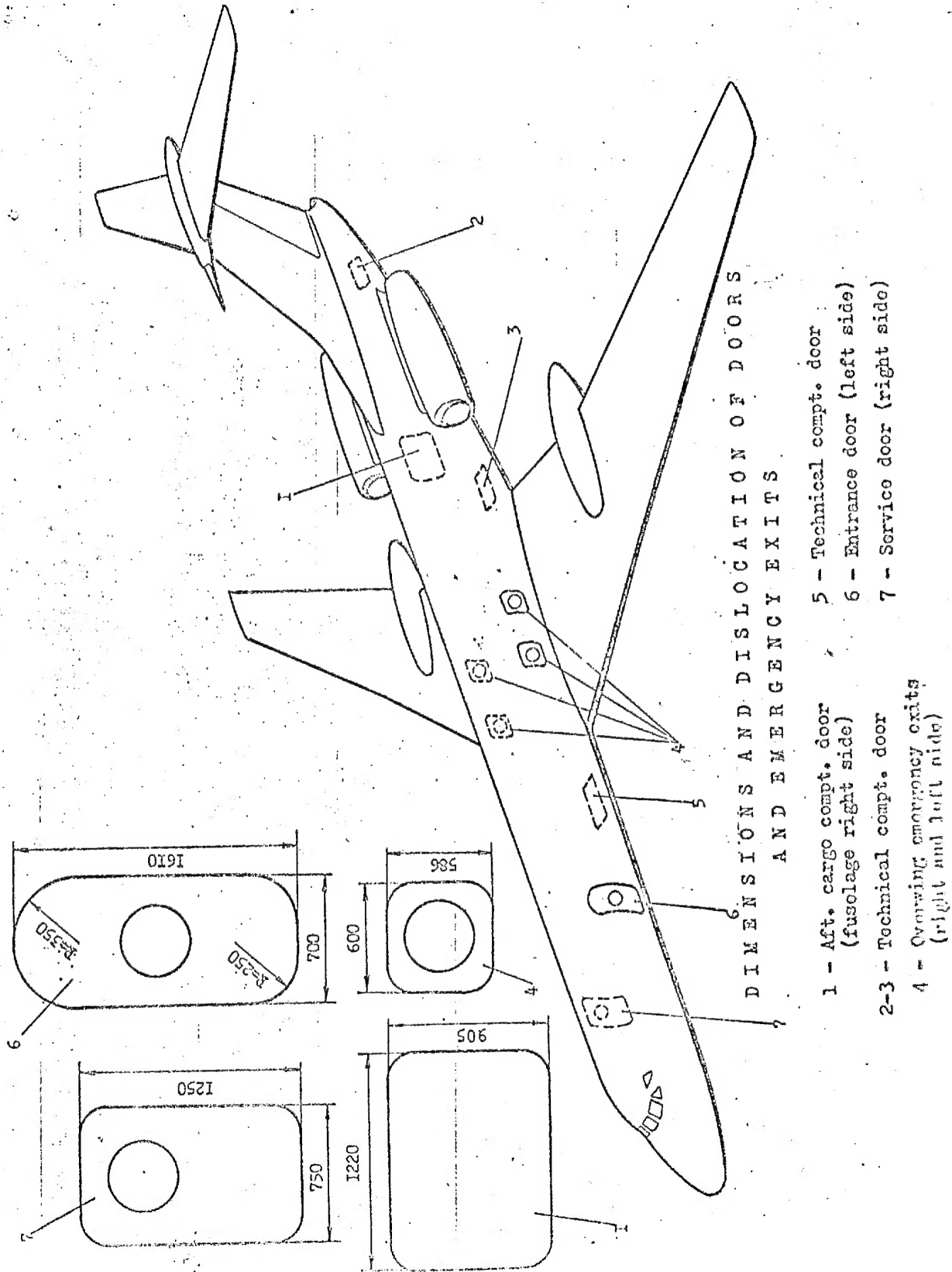
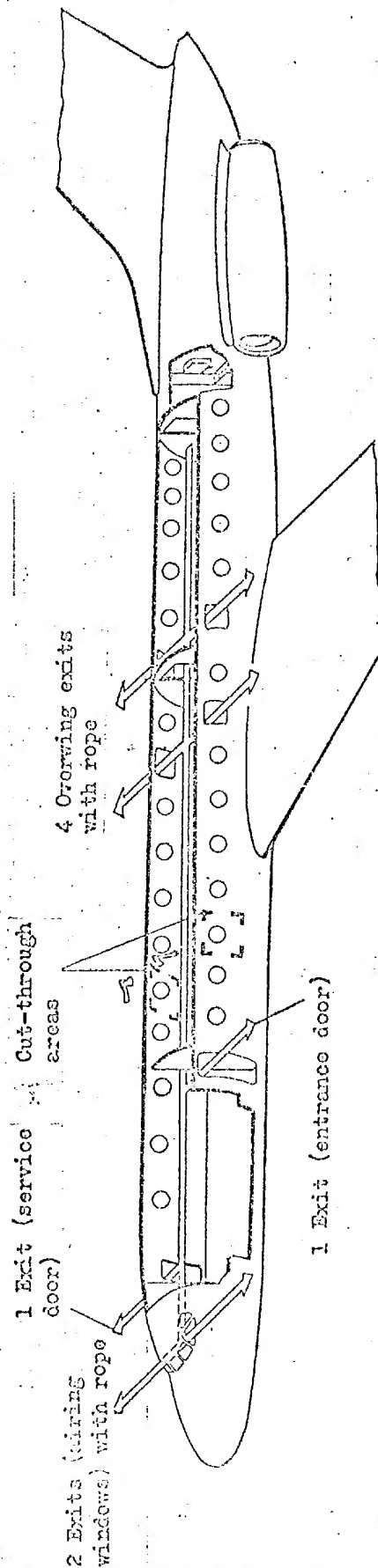
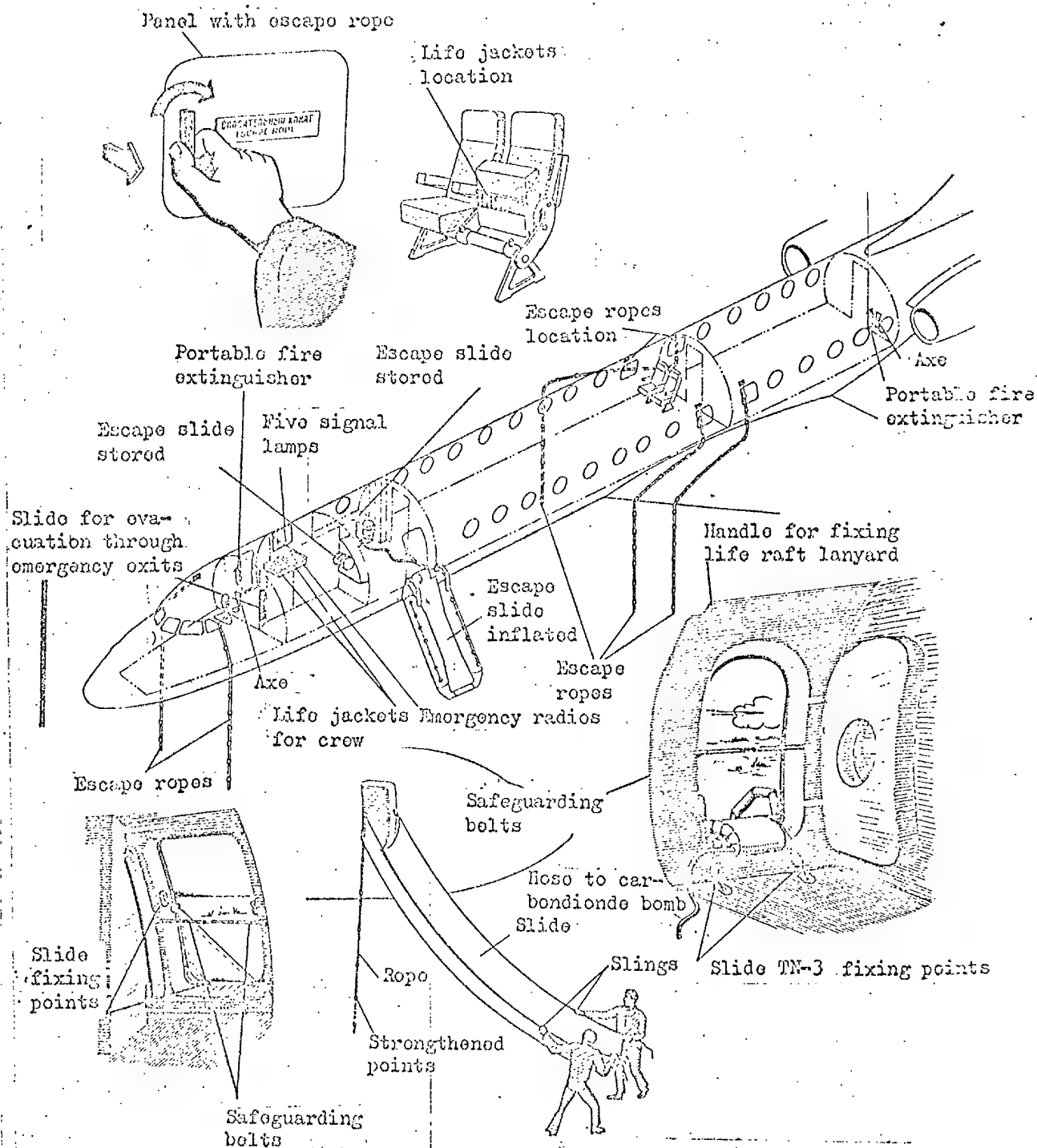


FIG. 2



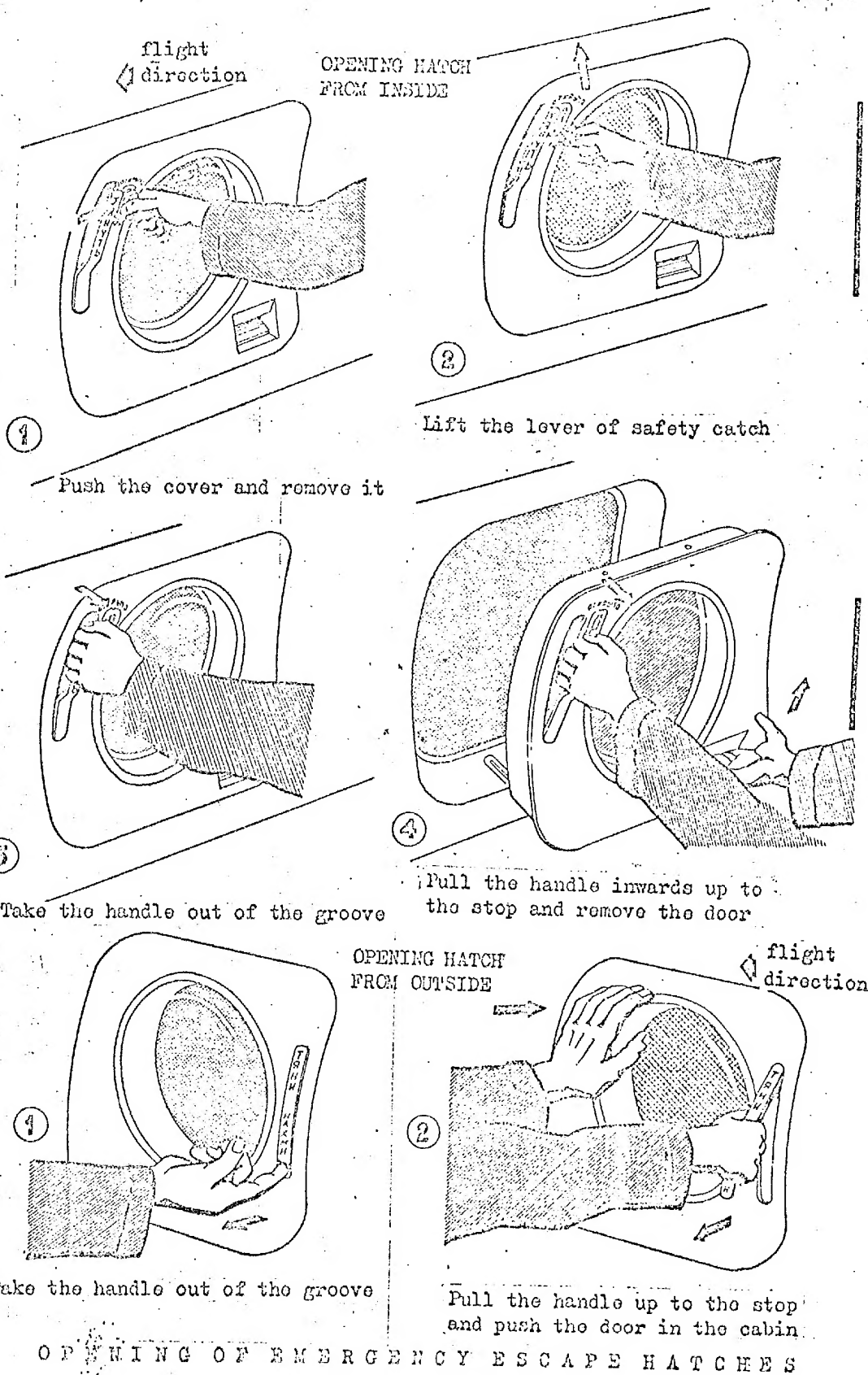
EMERGENCY AIRCRAFT EVACUATION

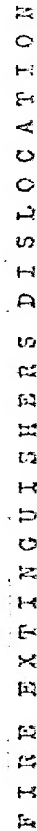
FIG. 3.

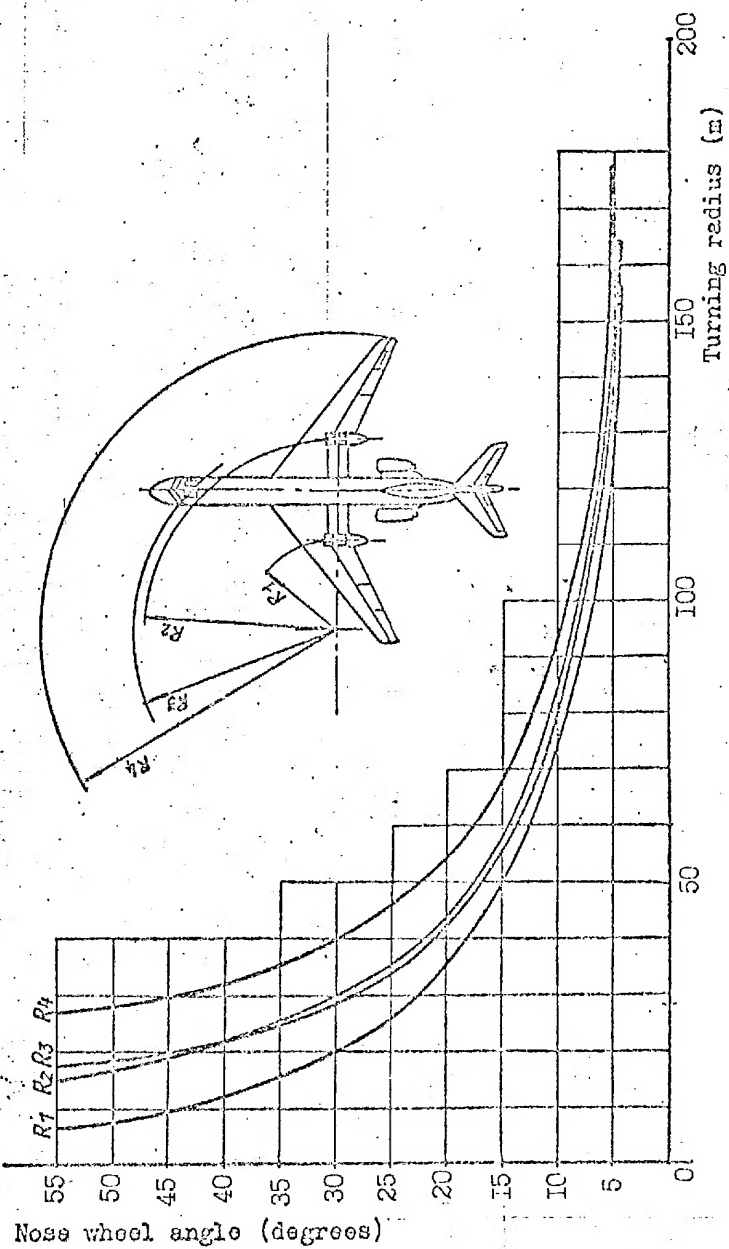


EMERGENCY EQUIPMENT LOCATION

FIG. 4







TURNING TRAJECTORIES

Tu - 134A

WEIGHT AND BALANCE MANUAL

6.2. Passenger compartments dimensions

	Length /m/	Width /m/	Height /m/	Floor area /sq.m./
Cmpt 01	1.82	2.71	1.96	4.93
Cmpt 02	2.15	2.71	1.96	5.82
Cmpt 03	2.25	2.71	1.96	6.09
Cmpt 04	2.47	2.71	1.96	6.29
Cmpt 05	2.25	2.71	1.96	6.09

6.3. Maximum permissible specific floor load in passenger compartment: 200 kg p.sq.m.

6.4. Maximum seating capacity: 76 seats

6.5. Freight Holds

6.5.01 Mean dimensions and load limits of freight holds

Freight hold No.	Max. height /m./	Length /m./	Mean width /m./	Floor area /sq.m./	Volume cu.m./	Max. spec. floor load /kg.p.sq.m./	Maximum load /kg/	
							luggage	mail+cargo
							150	285
							/kg.p.cu.m./	
5	1.8	2.5	1.25	3.2	6.0	600	900	1 710
6	1.9	3.2	1.40	4.5	8.5	600	1 275	2 420

6.5.02 Freight hold door dimensions

Freight hold No.	Height /m./	Width /m./	Height to sill above ground /m./
5	1.250	0.750	2.350
6	0.905	1.220	2.341